ONTARIO. WATER RESOURCES COMMISSION

A report on a Water Quality survey of Stony Lake and Clear Lake in the county of Peterborough.

1969

A Report on a

Water Quality Survey

of

STONY LAKE and CLEAR LAKE

in the

COUNTY OF PETERBOROUGH

Division of Sanitary Engineering
District Engineers Branch

1969

REPORT

Ontario Water Resources Commission

Municipality: County of Peterborough Township of Burleigh, Dummer, Douro and Smith — Date of Inspection: August 14, Sept 11/69

Re: Water Quality Survey of Stony Lake and Clear Lake

Field Inspection by: R. C. Manson, Engineer — Report by: R. C. Manson, P. Eng.

INTRODUCTION

During the spring of this year, a partial survey of waste disposal facilities serving premises on Stony Lake was conducted by private persons. A report together with photographs outlining 16 cases of inadequate facilities, which were or could cause pollution, was distributed.

In early June, Mr. W. G. Pitman, MPP, Constituency of Peterborough, in a question in the House, expressed concern regarding pollution in the Kawartha Lakes.

Since recent data regarding Stony Lake was not available, a survey was performed on August 14 and September 11, 1969, to assess the water quality of Stony Lake and adjoining Clear Lake.

PREVIOUS SURVEY

The last comprehensive water quality survey conducted by staff of this Commission in this area occurred on July 18, 1961. At that time, the survey covered most of Stony Lake only and revealed the water to be of excellent quality. Of the eighteen samples collected, only 5 samples contained coliform organisms with the highest content being 3 coliforms per 100 ml.

SAMPLING PROCEDURES

During the August 14 survey, 43 bacteriological samples and 14 chemical samples were collected at various locations in Stony and Clear Lakes to determine the bacterial content and the levels of chlorides and nutrients (nitrogen and phosphorus compounds).

Subsequent to receiving the results of the first survey, a second survey was conducted on September 11. Bacteriological samples were collected at 48 locations. Chemical samples were collected at eight locations mainly along the south shore of Stony Lake and the upper east shore of Clear Lake.

All samples were delivered to the OWRC Laboratory in Toronto on the same day of sampling. The bacteriological samples were chilled while in transit by means of ice placed in the sample storage boxes.

The locations of the sampling points are shown on the appended map.

SAMPLING CONDITIONS

On August 14, generally sunny warm weather prevailed, with the atmospheric temperature being approximately 80°F. The wind was from the south-west.

During the September 11 survey, rain fell during most of the day. The atmospheric temperature was approximately 60°F; the wind was from the west.

Of particular significance is the fact that each sampling occasion represented different conditions with respect to use of lake waters. Recreational use was quite extensive on August 14 since the tourist season was in effect. However, on September 11, the tourist season was, for the most part, over. Many cottages were unoccupied and lake use was much less than on August 14. Hence, the possibility of pollution occurring would be much less on September 11 than on August 14.

SAMPLE RESULTS

The laboratory results pertaining to the water samples collected during this survey are appended (see appendix A) to this report. Reference should be made to the aforementioned map to determine the location of the various sampling points.

The significance of the various analyses employed to assess the quality of the surface waters is included in Appendix B.

August 14:

The bacteriological results indicate that the water was polluted and, therefore, unfit for swimming at five locations, namely, the inlet and near the inlet to Stony Lake at Burleigh Falls, south of Hurricane Point and north of Davis Island in Stony Lake, and along the west side of Clear Lake. Coliform concentrations from 1000 to 2399 coliforms per 100 ml were found at seven additional locations, three of which are situated at the south end of Clear Lake; the remaining four were at McCrackens Landing, north-east of Collins Island, east of Hurricane Point, and south of Monroe

Island in Clear Lake. The faecal coliform counts were low with the highest value being 12 occurring near Stonyridge in Stony Lake.

The chemical analyses did not reveal any noteworthy concentration of free ammonia, total kjeldahl and nitrate nitrogens or chlorides. However, nitrite nitrogen ranged from .004 to .010 ppm. Also, the concentration of soluble phosphorus was 0.01 ppm or greater along the south shore of Stony Lake from Crowes Landing west as far as the YMCA camp on upper Clear Lake. The soluble phosphorus concentration of 0.55 ppm at Crowes Landing is unusually high.

<u>September 11</u>:

The total coliform counts for samples collected on this date were much lower than the August 14 counts. The highest coliform count was 176 coliforms per 100 ml; most of the samples had total coliform counts below 100 coliforms per 100 ml. Unfortunately, faecal coliform determinations were not performed due to a reported shortage of laboratory staff.

Regarding chemical quality, the concentrations of chlorides or nitrogen compounds with the exception of nitrite were not noteworthy. The nitrite nitrogen concentration ranged from .003 to .004 ppm. Only three of the seven samples collected along the south shore of Stony Lake contained a soluble phosphorus concentration of 0.01 ppm or greater; these samples were collected between Gilchrist Bay and the YMCA camp on upper Clear Lake.

WATER QUALITY MONITORING RESULTS

Samples are collected by this Commission's Division of Sanitary Engineering at various locations in the Kawartha Lakes to monitor the water quality on a long term basis. Two locations, namely, the outlets of Lovesick Lake and Stony Lake (Clear Lake) are of interest. The recent bacterial results pertaining to these locations are found in Appendix C. It is noted that, on two occasions, the bacterial content of the water entering Stony Lake exceeded the OWRC objective.

OBSERVATIONS OF PRIVATE SEWAGE DISPOSAL

While it was not the purpose of this investigation to carry out an intensive survey of the sewage disposal facilities provided for residences on the shore and islands, some facilities were checked at random. On one island, human wastes were retained in a chemical toilet but kitchen sink wastes were allowed to discharge to Stony Lake. At another location, the pit privy was located on a rocky area within 20 feet of the lake. On another island, the pit privy container located beside the lake consisted of a barrel with an outlet at the bottom; at the cottage, various drain pipes apparently coming from inside plumbing fixtures were observed leading directly to the lake. While an assessment of all private sewage disposal facilities cannot be made on the basis of these few residences, other information received by Commission staff indicates that the conditions found during this investigation

appear to be typical of many residences in Stony and Clear Lakes.

It was also noted that the type of development and terrain would tend to cause sewage disposal problems. In certain areas, cottage development along the lakeshore was quite dense thereby leaving inadequate space for septic tank systems. In many areas, particularly in Stony Lake, there was a general absence of adequate soil cover; it was common to observe cottages on rocky areas or solid rock. The provision of adequate facilities would be quite difficult under the latter conditions. Another factor to compound the sewage disposal problem is that the sewage disposal facilities provided for summer residences constructed sometime ago (apparently, recreational use of Stony Lake began well before the turn of the century) have become outdated and inadequate due to increased water consumption resulting from the rising standard of living.

SIGNIFICANCE OF SAMPLE RESULTS

In comparing the bacterial counts pertaining to the August 14 and September 11 sampling, it is noted that significantly higher counts were found during the August 14 sampling. While it is recognized that two samples having counts in excess of 2400 coliforms per 100 ml. reflected the discharge of polluted water from Lovesick Lake (source is unknown at this time), there were still ten August 14th samples having total coliform counts exceeding 1000 per 100 ml with three of these exceeding the OWRC objective. The

highest count during the September 11 sampling was 176 total coliforms per 100 ml. The difference in bacterial quality is attributed to pollution resulting from recreational use of the lakes, which use was quite high on August 14 but minimal on September 11.

Further, the high total coliform counts during the August 14 samples could have been due to a direct discharge of sewage, runoff resulting from an appreciable rain, or sewage pollution having occurred remotely either in time or space. Since the faecal coliform count was low, no appreciable rain apparently had occurred prior to the sampling and significant municipal or industrial discharges are not known to exist in the area concerned, it is concluded that the bacterial pollution is due to inadequate private sewage disposal facilities serving premises on the lakeshore and islands.

A significant difference in the bacterial quality of Stony Lake is noted when comparing sampling performed during the recreational periods during 1961 (July 18) and 1969 (August 14). The two surveys reveal that the waters of the same area of Stony Lake have deteriorated; however, the coliform count in 1969 in the area compared did not exceed the OWRC objective.

The presence of low concentrations of nitrite nitrogen reveals that Stony and Clear Lake were biologically active.

The presence of soluble phosphorus generally along the south shore of Stony Lake during the August 14 sampling was confirmed to some extent by the September 11 sampling. The smaller values and shorter distance where soluble phosphorus concentrations of .01 ppm or greater were found during the September 11 sampling are attributed to the termination of the significant recreational use of Stony Lake which occurred at the beginning of September. While the soluble phosphorus concentrations were relatively high during samplings, it is probable that much higher concentrations were present earlier in the season since most of the algal growth and, therefore, phosphorus intake had already occurred by this time. Since farming was not reported to be significant along the south shore (thereby eliminating agricultural runoff as a significant source of nutrients) and cottage development is more dense along the south shore of Stony Lake, the phosphorus content appears to be due essentially to private sewage disposal facilities.

SUMMARY AND CONCLUSIONS

A water quality survey of Stony Lake and Clear Lake was conducted on August 14 and September 11, 1969.

The bacteriological samples collected on August 14 contained significantly higher total coliform counts than those samples collected on September 11. In fact, the water at five locations on August 14 was found to be polluted to the point of being unfit for swimming. Two of these locations were affected by an unknown pollution source

west of Stony Lake. The difference in the coliform concentrations is attributed to the fact that recreational use of the waters of Stony and Clear Lakes was high on August 14 but was minimal on September 11.

Soluble phosphorus was also found to be present in higher concentrations prior to the termination of the summer recreational period. Further, these concentrations were present generally along the south shore of Stony Lake where recreational development is significant.

It was also noted that the bacterial quality of Stony Lake had deteriorated somewhat since the 1961 survey (same areas being compared).

The high coliform counts and the presence of soluble phosphorus is attributed to inadequate private sewage disposal facilities serving premises on the lakeshore and islands. Such inadequate facilities include malfunctioning septic tank systems, privies that are too close or discharge directly to the lake waters, and sinks, wash basins, etc which drain to the lake. Visual observations of the development and terrain together with other information received by this Commission's staff confirm this conclusion.

According to the Public Health Act and the Municipal Act, the local health unit and each municipality respectively

have the authority to correct sewage problems associated with inadequate sewage disposal facilities serving private premises. However, it should be appreciated that, just as the problem occurred over a period of time, the correction of the problem will require time, especially in view of the size of and extent of development on these lakes. In general, the program, staff and budget of health units is such that they are not capable of carrying out concentrated extensive surveys into the adequacies of private sewage disposal systems. Therefore, it is desirable that private citizens and interested organizations such as cottagers' associations assist in ensuring that the problems are corrected.

RECOMMENDATIONS

1. Adequate waste disposal facilities should be provided and employed at all premises near the lakeshore and on islands of Stony Lake and Clear Lake, in order to exclude all untreated or inadequately treated wastes from these waters.

2. A survey of all premises on Stony Lake and Clear Lake should be conducted to determine the adequacy of existing sewage disposal facilities and then, if required, recommend corrective action.

/jkc

Prepared by: R. C. Manson

R. C. Manson,
Engineer,
Division of Sanitary Engineering.

APPENDIX A

Stony and Clear Lakes

Bacteriological Quality - 1969

Sampling Point	M.F. Coliform Count per 100 m[illegible]		
	August 14		September 1[illegible]
	Total Coliform	Faecal Coliform	Total Coliform
1. McCrackens Landing	1140	< 4	16
2. Near Carveth's Marina	---	--	4
3. South of Sheriff Island	900	< 4	12
4. North of Davis Island	2800	8	16
5. South of Stock Island	120	< 4	32
6. South of Monroe Island	1200	< 4	12
7. YMCA Camp (east of Twp line)	900	4	40
8. West of Douro Township line	620	< 4	40
9. North of Fiddlers Bay (Camp)	390	< 4	108
10. South Beach	1700	< 4	8
11. Clear Lake outlet	2300	< 4	< 4
12. North-west of Fiddlers Bay	2100	< 4	28
13. West side of Clear Lake	2800	< 4	8
14. North of Sandy Point	480	8	16
15. West of Sister Island	400	8	52
16. North-west of Pompadour Island	80	< 4	32
17. South-west of Collins Island	190	< 4	12
18. North-west of Collins Island	1700	2	72
19. South-west of Kiluna Island	740	< 4	148
20. West of Hurricane Point	---	--	12
21. South of Hurricane Point	2400	< 4	8
22. South of Hurricane Point	200	2	4
23. East of Stony Lake inlet (Camp)	6300	8	144
24. Stony Lake inlet	10,200	2	8
25. West of Stony Lake inlet (Marina)	---	--	156
26. East of Hurricane Point	1900	4	112
27. North-west of Piper Island	110	< 4	140
28. North of Lech Island	900	4	116
29. Mount Julian	320	4	176
30. Centre of Northey Bay (Marina)	240	4	56
31. Mouth of Northey Bay	180	4	168
32. West of Griffith Island	---	--	24
33. North of Brock Island	110	4	44
34. Young Bay east	150	< 4	120
35. Eels Creek mouth	260	4	36

Sampling Point	M.F. Coliform Count per 100 ml		
	August 14		September 11
	Total Coliform	Faecal Coliform	Total Coliform
36. Stonyridge	290	12	20
37. East end of Stony Lake	120	< 4	< 4
38. South Bay inlet	260	8	4
39. East of Pine Island	190	< 4	4
40. South of Pine Island	---	--	32
41. South-west of Long Island	590	< 4	44
42. South of Glassey Island	230	< 4	24
43. East of Crowes Landing	180	4	56
44. Crowes Landing	350	4	44
45. South-west of Gibson Island	90	< 4	32
46. East of Callender Island	400	< 4	68
47. North of Gilchrist Bay	800	< 4	160
48. East of McCrackens Landing	600	< 4	110

NOTE: < means less than

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES

All analyses except pH reported in p.p.m. unless otherwise indicated

RIVER SURVEY

1 p.p.m. = 1 mgm. / litre
= 1 lb./100,000 Imp. Gals.

Municipality: Peterborough County Report to: c.c.

Source: Trent River System

Date Sampled: Aug 14/69 by: R. Manson

Lab. No.	NITROGEN AS N				Phosphorus as P		Chloride						
	Free Ammonia	Total Kjeldahl	Nitrite	Nitrate	Tot.	Sol.	as Cl						
R 16276	0.08	0.49	0.004	0.01	0.02	0.02	4						
R 16277	0.01	0.49	0.006	< 0.01	0.03	o.01	4						
R16278	0.03	0.43	0.007	< 0.01	0.02	<0.01	4						
R16279	0.02	0.40	0.007	< 0.01	0.02	<0.01	4						
R16280	0.05	0.40	0.004	< 0.01	0.02	<0.01	4						
R16281	0.02	0.44	0.006	< 0.01	0.02	<0.01	4						
R16282	0.02	0.51	0.006	< 0.01	0.02	<0.01	4						
R16283	0.01	0.47	0.007	< 0.01	0.03	<0.01	4						

R16276	1.	Stony Lake	McCrackens Landing
R16277	7.	Clear Lake	YMCA Camp (East of Douro Twp Line)
R16278	11.	Clear Lake	Outlet
R16279	12.	Clear Lake	North-west of Fiddlers Bay (algae present)
R16280	14.	Clear Lake	North of Sandy Point
R16281	19.	Stony Lake	South-west of Kiluna Island
R16282	24.	Stony Lake	Inlet
R16283	29.	Stony Lake	Mount Julian

APPENDIX A (cont'd)

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES

All analyses except pH reported in p.p.m. unless otherwise indicated

RIVER SURVEY

1 p.p.m. = 1 mg/litre = 1 lb./100,000 Imp. Gals.

Municipality: Peterborough County Report to: c.c.

Source: Trent River System

Date Sampled: Aug 14/69 by: R. Manson

Lab. No.	NITROGEN AS N				Phosphorus as P		Chloride						
	Free Ammonia	Total Kjeldahl	Nitrite	Nitrate	Tot.	Sol.	as Cl						
R16284	0.03	0.42	0.007	< 0.01	0.03	< 0.01	4						
R16285	0.03	0.38	0.010	0.01	0.01	< 0.01	3						
R16286	0.05	0.68	0.006	< 0.01	0.01	< 0.01	2						
R16287	0.03	0.38	0.007	< 0.01	0.01	< 0.01	3						
R16288	0.04	0.34	0.005	< 0.01	0.59	0.55	3						
R16289	0.07	0.40	0.004	0.31	0.03	0.02	3						

R16284	33. Stony Lake North of Brock Island
R16285	35. Stony Lake Eels Creek mouth
R16286	36. Stony Lake Stonyridge
R16287	42. Stony Lake South of Glassey Island
R16288	44. Stony Lake Crowes Landing
R16289	47. Stony Lake North of Gilchrist Bay

APPENDIX A (cont'd)

5M-60-12969

ONTARIO WATER RESOURCES COMMISSION
CHEMICAL LABORATORIES

All analyses except pH reported in p.p.m. unless otherwise indicated

1 p.p.m. = 1 mgm. / litre = 1 lb./100,000 Imp. Gals

Municipality: Peterborough County Report to: c.c.

Source: Trent River System

Date Sampled: Sept 11/69 by: R. Manson

Lab. No.	Chloride as Cl		NITROGEN AS N Free Ammonia	Total Kjeldahl	Nitrite	Nitrate	Phosphorus as P Tot	Sol					
R19420	3		0.03	0.35	.003	.001	0.01	< 0.01					
R19421	3		0.03	0.29	.004	0.01	0.01	< 0.01					
R19422	3		0.04	0.24	.004	0.01	0.01	< 0.01					
R19423	3		0.03	0.25	.003	<0.01	0.01	< 0.01					
R19424	3		0.04	0.35	.004	<0.01	0.02	0.01					
R19425	3		0.03	0.29	.003	<0.01	0.02	0.01					
R19426	4		0.02	0.27	.004	<0.01	0.03	0.01					
R19427	3		0.03	0.26	.003	<0.01	0.01	< 0.01					

R19420 39. Stony Lake East of Pine Island
R19421 41. Stony Lake South-west of Long Island
R19422 44. Stony Lake Crowes Landing
R19423 46. Stony Lake East of Callender Island
R19424 47. Stony Lake North of Gilchrist Bay
R19425 1. Stony Lake McCrackens Landing
R19426 7. Clear Lake YMCA Camp (East of Douro Twp Line)
R19427 32. Stony Lake West of Griffith Island

APPENDIX B

Significance of Laboratory Analyses

The analyses employed in this investigation to assess the quality of the surface water are as follows:

Coliform Count

The Membrane Filter technique was used to obtain a direct enumeration of coliform bacteria. These bacteria are divided into genera (group) ranging from Escherischia coli (E. coli) bacteria, which originate mainly in the intestines of man and other warm-blooded animals, to Enterobacter aerogenes (Aerobacter aerogenes) bacteria, which basically are found in soil and vegetation, yet also are present in warm-blooded animals. Coliform bacteria, therefore, are always present in large numbers in sewage, but are generally minimal in other stream pollutants.

Enumeration is normally performed with respect to the total number of all types of coliform bacteria present in the sample but can also be done with respect to faecal coliform bacteria. Most of the coliform bacteria found in the faecal coliform test are of the genus E. coli. It should be noted, however, that the absence of faecal coliform bacteria as determined by the latter test does not necessarily indicate that the coliforms enumerated under the total coliform bacteria test do not originate in warm-blooded animals.

The results of the bacterial examinations are reported as "M.F. Coliform count per 100 ml." The OWRC objective is that the <u>total</u> coliform count in recreational surface waters should not exceed 2400 organisms per 100 milliliters (ml). Some authorities are of the opinion that the faecal coliform count should not exceed 100 organisms per 100 ml.

<u>Chlorides</u>

Chlorides are universally present in domestic and many industrial wastes and naturally in most waters. The OWRC 1964 Drinking Water Objectives recommend that chloride be limited to 250 ppm in supplies intended for public use. At concentrations above 250 ppm, water begins to taste salty which is objectionable to many people.

<u>Nitrogen</u>

<u>Free ammonia</u> nitrogen is the soluble product in the decomposition of nitrogenous organic matter. It is also formed when nitrites and nitrates are reduced to ammonia either biologically or chemically. Small amounts of ammonia, too, may be taken out of the atmosphere by rain water. The following values may be of general significance in appraising free ammonia content: Low: 0.015 - 0.03 ppm, Moderate: 0.03 - 0.10 ppm, High: 0.10 ppm or greater.

<u>Total kjeldahl</u> is a measure of the total nitrogenous matter present except that measured as nitrite and nitrate. The total kjeldahl less the ammonia nitrogen gives a measure of the organic

nitrogen present. Ammonia and organic nitrogen determinations are important in assessing the availability of nitrogen for biochemical utilization. The normal range for total kjeldahl is 0.1 - 0.5 ppm.

Nitrite nitrogen is usually an intermediate oxidation product of ammonia. The significance of nitrites, therefore, varies with their amount, source and relation to other constituents of the samples, notably the relative magnitude of ammonia and nitrate present. Since nitrite is rapidly and easily converted to nitrate, its presence in concentrations greater than a few thousandths of a part per million is generally indicative of active biological processes in the water.

Nitrate nitrogen is the end product of aerobic decomposition of nitrogenous matter, and its presence carries this significance. Nitrate concentration is of particular interest in relation to the other forms of nitrogen that may be present in the sample. Nitrates occur in the crust of the earth and are a source of its fertility. The following ranges in concentration may be used as a guide: Low - less than 0.1 ppm: Moderate - 0.1 - 1.0 ppm: High - greater than 1.0 ppm.

Phosphorus

This element is commonly found in nature in the form of phosphates (PO_4). Raw or treated sewage, some industrial wastes, and agricultural drainage contain significant concentrations of phosphates. The laboratory provides two phosphorus determinations:

total phosphorus and soluble phosphorus. Total phosphorus includes orthophosphate, polyphosphate and organic phosphorus, while soluble phosphorus represents orthophosphates only.

Phosphorus is an essential nutrient for plant life and like nitrogen passes through cycles of decomposition and photosynthesis. Nitrogen and phosphorus are both essential for the growth of algae and limitation of these compounds controls their rate of growth.

Generally, soluble phosphorus in concentrations of 0.01 ppm or greater at the beginning of the growing season may cause algal nuisance conditions.

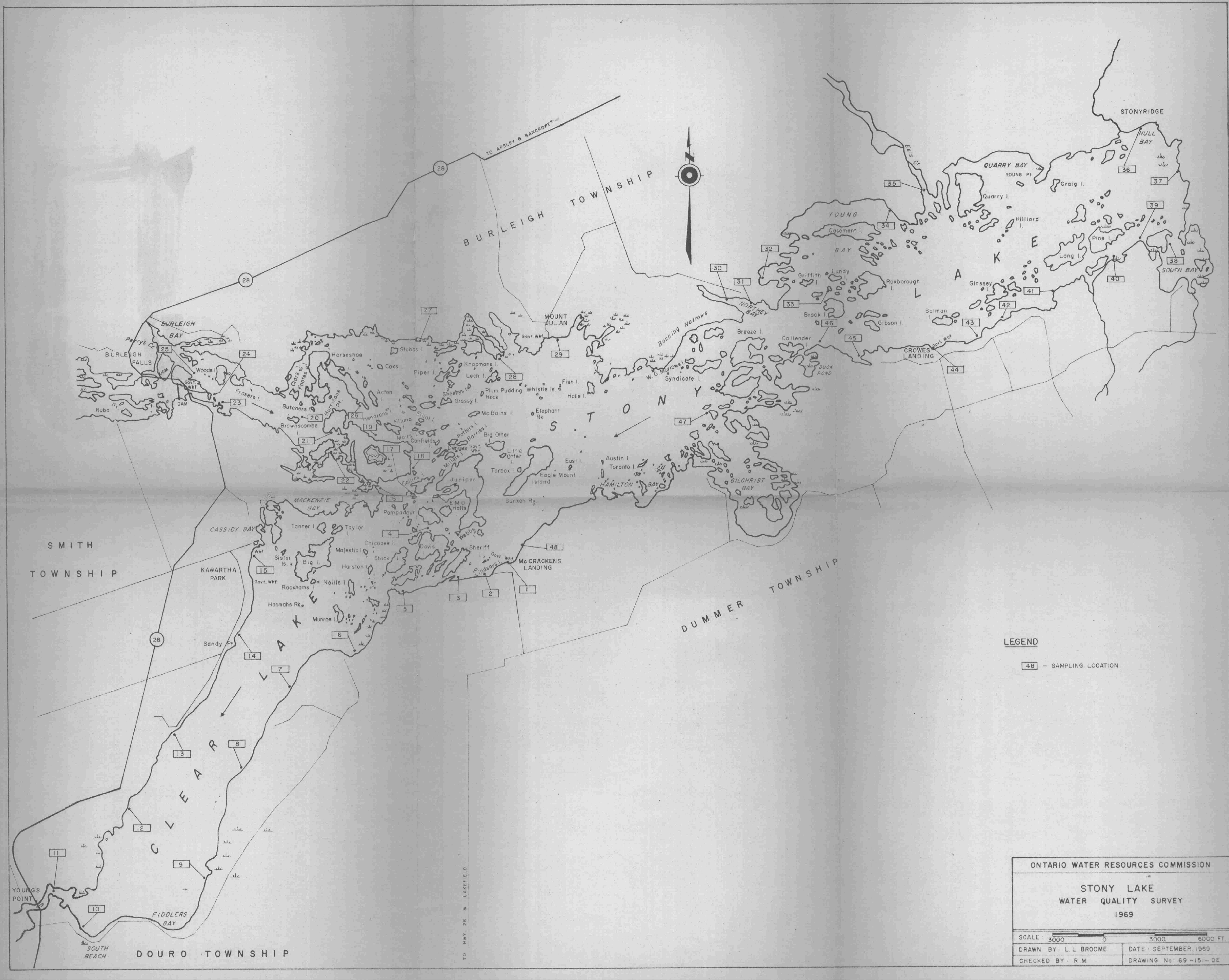
APPENDIX C

Bacterial Quality

OWRC Water Quality Monitoring Program

1968 and 1969 Water Years

Date Sampled	M.F. Total Coliform Count per 100 ml	
	Lovesick Lake Outlet	Stony Lake Outlet
March 28, 1968	4	4
April 18	0	0
May 9	32	24
May 30	28	32
June 27	32	96
July 18	14000	1800
August 8	44	64
September 5	96	24
September 25 1968	28	24
May 28, 1969	<4	<4
June 18	16	--
July 16	1100	1100
August 20	11000	900
September 17, 1969	36	292



BURLEIGH TOWNSHIP
SMITH TOWNSHIP
DUMMER TOWNSHIP
DOURO TOWNSHIP
STONY LAKE
CLEAR LAKE
TO APSLEY & BANCROFT
28
TO HWY. 28 & LAKEFIELD
BURLEIGH BAY
BURLEIGH FALLS
Perrys Cr.
DAM
Govt. Whf.
Woods I.
Frasers I.
Ruba
MOUNT JULIAN
Govt. Whf.
STONYRIDGE
HULL BAY
QUARRY BAY
YOUNG PT.
Quarry I.
Craig I.
Hilliard I.
Eels Cr.
YOUNG BAY
Casement I.
Griffith I.
Lundy I.
Roxborough I.
Glassey I.
Long I.
Pine I.
SOUTH BAY
NORTHEY BAY
Boshing Narrows
Brock I.
Breeze I.
Callender I.
Gibson I.
Salman I.
DUCK POND
CROWES LANDING
Govt. Whf.
W.G. Morrows I.
Syndicate I.
Fish I.
Halls I.
Whistle Is.
Plum Pudding Rock
Elephant Rk.
McBains I.
Big Otter
Little Otter
Torbox I.
Eagle Mount Island
East I.
Austin I.
Toronto I.
HAMILTON BAY
GILCHRIST BAY
Sunken Rk.
Stubbs I.
Coxs I.
Piper I.
Knapmans I.
Lech I.
Sheehys I.
Grassy I.
Horseshoe I.
Acton
Butchers I.
Brownscombe I.
Hendrens I.
Kiluna
Canfields
Juniper I.
EMO Halls
Pompadour
MACKENZIE BAY
CASSIDY BAY
Tanner I.
Taylor I.
Chicopee I.
Majestic I.
Davis
Webbs
Sheriff I.
Stock I.
Horston
Big I.
Sister Is.
Neills I.
Rackhams I.
Hanmahs Rk.
Munroe I.
Lindsays I.
Govt. Whf.
McCRACKENS LANDING
KAWARTHA PARK
Govt. Whf.
Sandy Pt.
YOUNG'S POINT
SOUTH BEACH
FIDDLERS BAY
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
LEGEND
48 – SAMPLING LOCATION
ONTARIO WATER RESOURCES COMMISSION
STONY LAKE
WATER QUALITY SURVEY
1969
SCALE: 3000 0 3000 6000 FT.
DRAWN BY: L.L. BROOME
DATE: SEPTEMBER, 1969
CHECKED BY: R.M.
DRAWING No: 69-151-DE

ONTARIO WATER RESOURCES COMMISSION
DIVISION OF SANITARY ENGINEERING.

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